

## *Sibbaldia minutissima* Kitam. (Rosaceae) Is Conspecific to *S. adpressa*. Studies of the Flora of Mustang, Central Nepal, 2.

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*Sibbaldia minutissima* Kitam. (Rosaceae) was described from a single specimen collected in Sangda, Mustang, Nepal. After examining the newly collected materials we concluded that *S. minutissima* should be treated as a synonym of *S. adpressa* Bunge.

**Key words:** Flora, Nepal, Rosaceae, *Sibbaldia*, *Sibbaldia adpressa*.

*Sibbaldia minutissima* was described from a single specimen collected by Sasuke Nakao at Sangda, Mustang District, Nepal in 1953 (Kitamura 1954). Kitamura (1954, 1955) noted that *S. minutissima* resembles *S. adpressa* Bunge in having long creeping rhizomes, pinnate leaves, and small flowers with white to cream colored petals, but differs in being smaller in habit, leaves, and flowers. Yü and Li (1985) treated *S. minutissima* as a synonym of *S. adpressa* without discussion. In 2002, we collected sufficient material to determine the extent of the morphological variations of *S. minutissima* near the type locality.

### Materials and Methods

*Sibbaldia minutissima* was collected at four localities near the type locality in Upper Mustang in 2002 (Miyamoto & al. 20240042a, 20240047, 20240084, and 20240115, TI). Dried specimens were boiled for several minutes and dissected under a binocular microscope. Leaves and floral

parts were observed and measured under the microscope. For comparison, specimens collected in Qinghai, SW China (Boufford & al. 26805, TI) and the type of *S. minutissima* (Nakao s. n., KYO, Fig. 1) were also examined.

### Results and Discussion

*Sibbaldia minutissima* was distinguished from *S. adpressa* Bunge by its smaller size, smaller leaves, and smaller flowers by Kitamura (1954, 1955). After the first collection, *S. minutissima* has not been collected again probably due to difficulty in entering Upper Mustang. Ohashi (1979) listed *S. minutissima* with citation of the type in the *Enumeration of the Flowering Plants of Nepal*. Recently, Press et al. (2000) and Bista et al. (2001) also regarded it as a distinct species.

*Sibbaldia adpressa* described from Russia by Bunge in 1829 is known from Russia, Mongolia, and China (Gansu, Hebei, Heilongjiang, Nei Mongol, Qinghai, Xinjiang,

Table 1. Comparison of morphological characters of *Sibbaldia minutissima* collected in Mustang (C Nepal), *S. adpressa* collected in Qinghai (SW China), and the type specimen of *S. minutissima*

	Mustang	Qinghai	Type of <i>S. minutissima</i>
Leaves	5–55 mm long	9–29 mm long	11–25 mm long
Lateral leaflets	2.5–8 mm long	3–8 mm long	3–6 mm long
Inflorescences	simple or several in cymes	simple or several in cymes	simple
Sepals	2–2.2 mm long	1.9–2.2 mm long	2 mm long
Petals	1.4–2.3 × 1–1.3 mm	1.7–2.7 × 1.1–1.3 mm	1.2–1.7 × 1–1.2 mm
Filaments	0.3–0.5 mm long	0.4–0.6 mm long	0.3 mm long
Anthers	0.3–0.4 mm in diam.	0.3–0.4 mm in diam.	0.3 mm in diam.
Ovaries	10–16, 0.5–0.6 mm long	11–15, 0.5–0.6 mm long	ca. 15, 0.5 mm long
Styles	1–1.2 mm long	0.9–1.2 mm long	1 mm long

and Xizang). Yü and Li (1985) treated *S. minutissima* as a synonym of *S. adpressa* without discussion. Yü et al. (1985) followed Yü and Li's treatment.

Table 1 shows morphological variation in *S. minutissima* from Upper Mustang, *S. adpressa* in Qinghai, and the type specimen of *S. minutissima*. After comparing variation in the leaves, inflorescences, and floral parts, we recognized that *S. minutissima* has a rather wide range of variations. In almost all features of *S. minutissima* agree with *S. adpressa*. We have concluded that *S. minutissima* and *S. adpressa* are conspecific. The type specimen of *S. minutissima* is considered to represent one of the small sized individuals (Fig. 2). Dr. M. Tahir Rajput (University of Sind, Pakistan) also redetermined the type specimen of *S. minutissima* as *S. adpressa* (Fig. 1), but we have not seen a published report for his reason.

#### Taxonomic treatment

***Sibbaldia adpressa* Bunge in Ledeb., C. A. Mey. & Bunge, Fl. Alt. 1: 428 (1829). Hand.-Mazz. in Acta Hort. Gothob. 13: 328 (1938). Yü & Li in Yü & al., Fl. Reipubl. Popul. Sin. 37: 341, t. 53, f. 11 (1985). Yü & al. in Wu, Fl. Xizang. 2: 669, t. 202, f. 10 (1985). Han in Mao, Fl. Xinjiang. 2(2): 331 (1995). Type: Altai. In apricis montium et in**

campis siccis editis ad fl. Kan et Tschuja. Bunge s. n. (LE-holo, not seen).

*Sibbaldia minutissima* Kitam. in Acta Phytotax. Geobot. 15: 132 (1954); in Kihara, F. Fl. Nep. Himal. 159 (1955). H. Ohashi in H. Hara & Williams, Enum. Flow. Pl. Nep. 2: 147 (1979). Press & al., Annotat. Checklist Flow. Pl. Nep. 271 (2000). Bista & al., Flow. Pl. Nepal 330 (2001). Type: Nepal. Sangda, 3800 m. S. Nakao s. n., 12 May 1953 (KYO-holo).

*Sibbaldianthe adpressa* (Bunge) Juz., Fl. URSS 10: 230, t. 17, f. 1 (1941).

[Figs. 1, 2]

[Description from the Nepali representatives] Perennial herbs. Rhizomes woody, much branching, slender and long-creeping. Radical leaves trifoliolate or imparipinnate, obovate to oblanceolate, 0.5–5.5 cm long, 0.3–2.2 cm wide; leaflets 3–5, upper surface almost glabrous, margin and lower surface strigose; lateral leaflets broadly linear to lanceolate, 2.2–13 mm long, 0.9–3.2 mm wide, entire, apex acute, base of uppermost leaflet pair decurrent; terminal leaflet narrowly obovate to oblanceolate, 2.3–13 mm long, 1.1–6.2 mm wide, entire except tridentate at apex, base cuneate; petiole 1.0–22 mm long, strigose, stipules adnate to petioles in lower half, auricles of stipules triangular to linear, entire, apex acute to acuminate, glabrous inside, aparsely strigose outside and

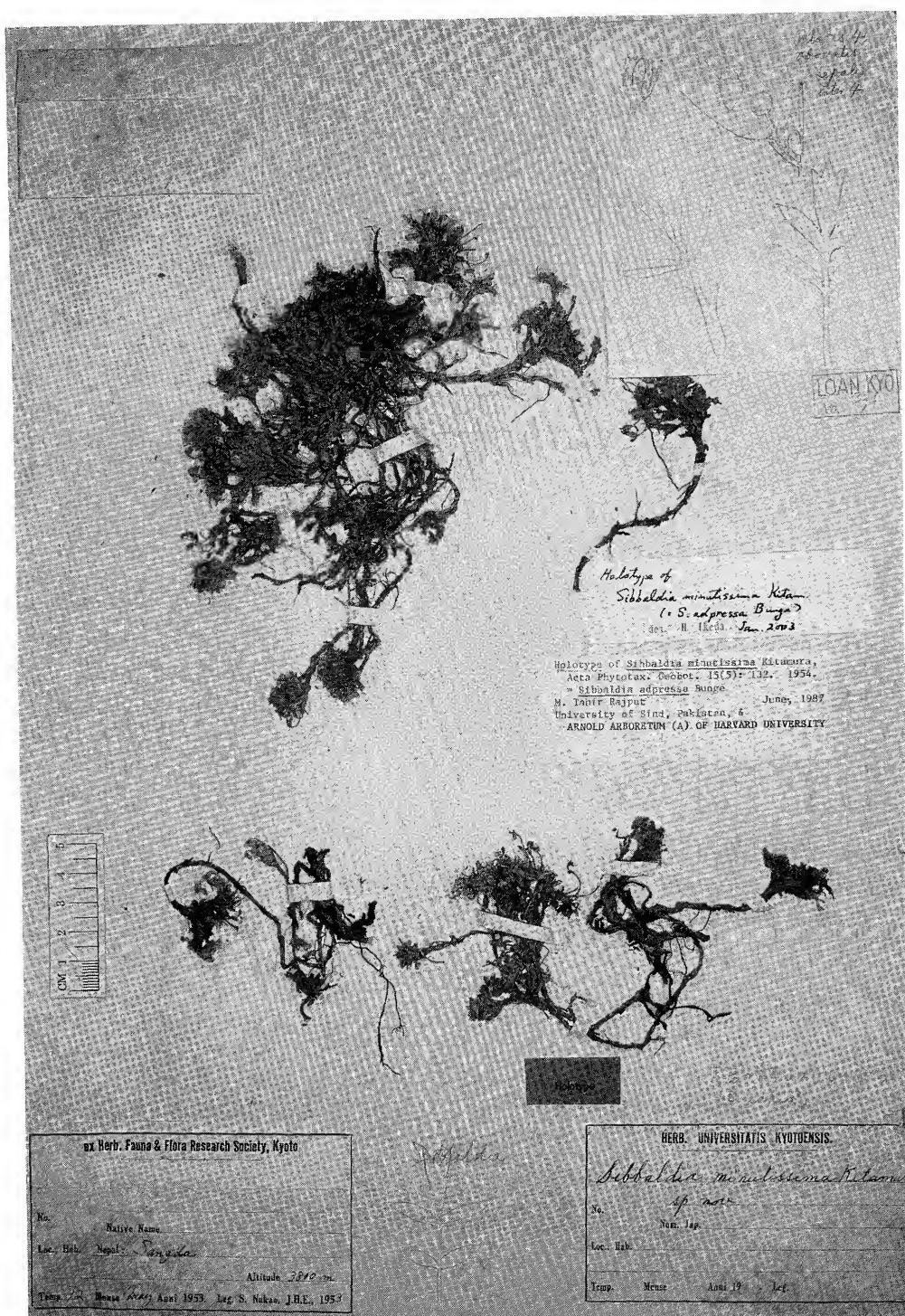


Fig. 1. Holotype of *Sibbaldia minutissima* Kitam. (Nakao s. n., 12 May 1953, KYO).

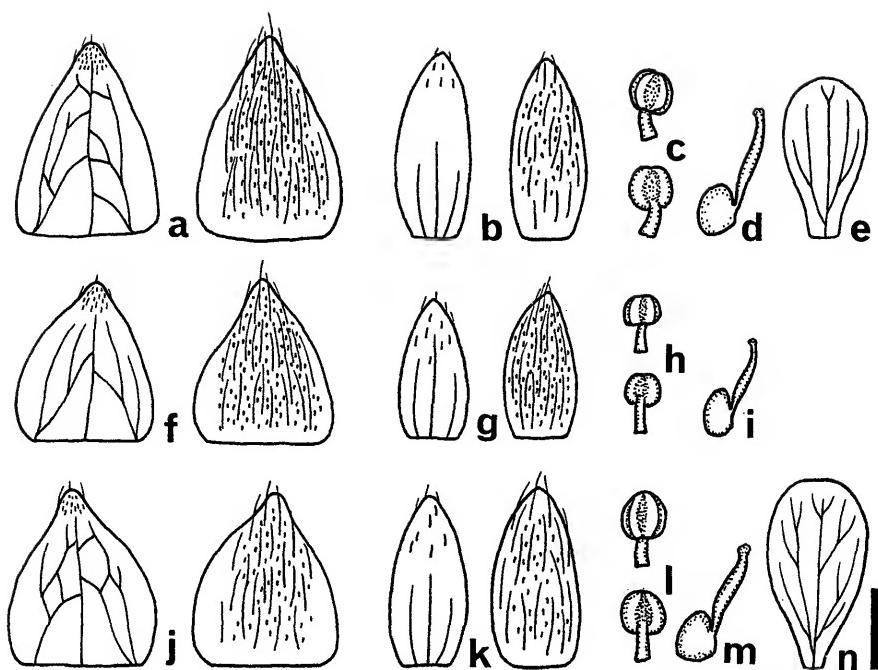


Fig. 2. Floral dissections of *Sibbaldia adpressa* Bunge. a–e: Miyamoto & al. 2024047 (TI), collected in the Upper Mustang. f–i: Nakao s. n. (KYO), holotype of *S. minutissima* Kitam. j–n: Boufford & al. 26805 (TI), collected in Qinghai, SW China. a, f, j: sepals, inner surface (left) and outer surface (right). b, g, k: episeps, inner surface (left) and outer surface (right). c, h, l: stamens, inner surface (upper) and outer surface (lower). d, i, m: pistils. e, n: petals. Scale bar = 1 mm.

margin. Flowers hermaphrodite, 5 (rarely 4)-merous, solitary or 2–5 in cymes, 3.5–7.0 mm in diameter; peduncles and pedicels with appressed hairs; caudine leaves 1 or 2, resembling to radical leaves. Hypanthia shallowly cupulate, strigose outside, sparsely strigose inside; episeps 5 (rarely 4), ovate to broadly lanceolate, 0.8–1.2 mm long, 0.7–1.0 mm wide, apex obtuse to acute, strigose with minute glandular hairs outside, glabrous or sparsely hairy inside; sepals triangular to broadly ovate, 1.5–2.2 mm long, 1.3–1.7 mm wide, apex obtuse, strigose with minute glandular hairs outside, short villous on upper portion inside. Petals 5 (rarely 4), white to creamy white, spatulate to obovate, 1.7–2.5 mm long, 1.0–1.3 mm wide. Stamens 10 (rarely 8); filaments glabrous, 0.3–0.5 mm long; anthers orbicular, 0.3–0.4 mm across.

Pistils 10–16; ovary glabrous, ovoid, 0.5–0.6 mm long, 0.4–0.5 mm wide; styles lateral, slightly fusiform, 1.0–1.2 mm long; stigmas slightly inflated, papillate.

#### Specimens examined:

**Nepal.** Dhawalagiri Zone, Mustang Distr.: around Sangda Pass (a ridge of Jeula Danda), 4280 m (F. Miyamoto & al. 2024042a, 12 Aug. 2002, KATH, TI). Mustang Distr.: Pongio Kharka–Sangda Pass–Phalyak, 4310 m (F. Miyamoto & al. 20240047, 13 Aug. 2002, KATH, TI). Mustang Distr.: Chele–Taklam La Pass–Dajori La Pass–Samar–Bhena La Pass–Bhena–Yamda La (Soi) Pass–Syangboche, 3900 m (F. Miyamoto & al. 20240084, 16 Aug. 2002, KATH, TI). Mustang Distr.: Ghemi (Ghami)–Dhakmar–Mui La Pass–Ghar Gompa, 4030 m (F. Miyamoto & al. 20240115, 18 Aug. 2002, KATH, TI).

**China.** Qinghai. Yushu Xian: north of the city of Yushu on the road (highway 214) to Xining, 3600 m (D. E. Boufford & al. 26805, 30 June 1995, TI).

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### References

- Bista M. S., Adhikari M. K. and Rajbhandari K. R. (eds.) 2001. Flowering plants of Nepal (Phanerogams). Department of Plant Resources, National Herbarium & Plant Laboratories, Lalitpur, Nepal.
- Kitamura S. 1954. New species from Nepal collected by Sasuke Nakao, a member of the Japan Himalayan Expedition III. *Acta Phytotax. Geobot.* **15**: 129–134.
- 1955. Rosaceae. In: Kihara H. (ed.), *Fauna and Flora of Nepal Himalaya*, pp. 146–161.
- Press J. R., Shrestha K. K. and Sutton D. A. 2000. Annotated checklist of the flowering plants of Nepal. The Natural History Museum, London.
- Yü T. T. and Li C. L. 1985. *Sibbaldia* L. In: Yü T. T., Lu L. T., Ku T. C., Kuan K. C. and Li C. L. (eds.), *Fl. Reipubl. Popul. Sin.* **37**: 335–346. Science Press, Beijing (in Chinese).
- , Lu L. T. and Ku T. C. 1985. *Sibbaldia* L. In: Wu C. Y. (ed.), *Flora Xizanica* **2**: 665–671. Science Press, Beijing (in Chinese).

池田 博<sup>a</sup>, 大場秀章<sup>b</sup>, M. N. スペディ<sup>c</sup>: ネパール・ムスタン産植物の研究 2. *Sibbaldia minutissima* Kitam. (バラ科)について

タテヤマキンバイ属の一種である *Sibbaldia minutissima* Kitam. は、1953年にムスタンの Sangda で採集された標本にもとづき記載された。これまでタイプ標本 1 点しかなく、その実体には不明な点が残されていた。2002年の Upper Mustang の調査で、*S. minutissima* を採集し、形態の変異を調べた。その結果、生育状況によりかなり変異が大き

いことが判明し、*S. minutissima* は *S. adpressa* Bunge の小型のものであると考えられた。*Sibbaldia minutissima* は *S. adpressa* の異名として扱うことが妥当である。

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